

# ALBA 820 FOUR-BAND FIVE

**CIRCUIT.**—Aerial coupling to the grid of V1, a triode-hexode frequency changer, is by a set of band-pass coils on the medium and long waves. On the short bands coupling is effected by H.F. transformers.

The oscillator section is of standard design and the oscillator anode selectively switched direct to the reaction windings. An iron-cored I.F. transformer, tuned to 117.5 kcs., couples V1 to the I.F. amplifier V2, an H.F. pentode. Both V1 and V2 are A.V.C. controlled except on the short waves.

Another I.F. transformer of similar construction couples V2 to the demodulating diode of V3, a double-diode valve. The demodulating diode load is R11, and the rectified potentials pass via an H.F. stopper resistance, R10, and L.F. coupling condenser, C11, to the manual volume control, R12, and thence to the grid of the output pentode.

The other diode of V3 provides a D.C. potential that is utilised in the usual manner to operate the A.V.C.

Between the anode and cathode of V4 a pentode compensator condenser is connected. Mains equipment consists of a transformer, a full-wave rectifying valve

V5, electrolytic smoothing condensers C16, C17, and smoothing choke (speaker field coil).

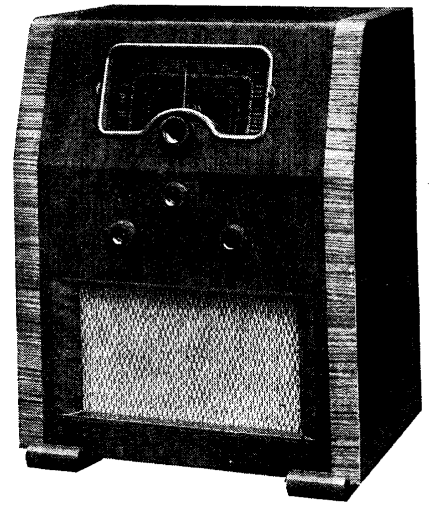
**Chassis Removal.**—Remove back of cabinet and the three grub-screw fixed control knobs, leaving the tone control fixed. Then remove the four chassis securing bolts from the underside of the shelf in the cabinet. The chassis may then be removed to the extent of the speaker cable, which is sufficient for normal purposes.

The speaker may be removed if desired by unscrewing the four nuts and disconnecting the two leads from the tone control resistance, which is fixed to the front of the cabinet.

**Special Notes.**—A flying lead, terminating in a wander-plug at the rear of the chassis, enables the mains wiring to be used as an aerial. When not in use the condenser is connected to an earthing socket, and operates as a mains suppressor.

Sockets at the rear of the chassis enable a pick-up to be connected. This should have a high output, as it operates only one stage of amplification.

There are two dial lights in screw-in holders clamped to brackets on the scale.



The Alba 820, made by A. J. Balcombe Ltd., is an inexpensive four-valve, plus rectifier, four-band A.C. super-het.

They are rated at 6.2 volts .3 amp., and have M.E.S. bases.

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## VALVE READINGS

No signal. Volume maximum. M.W. min. cap 200 volt. A.C. mains.

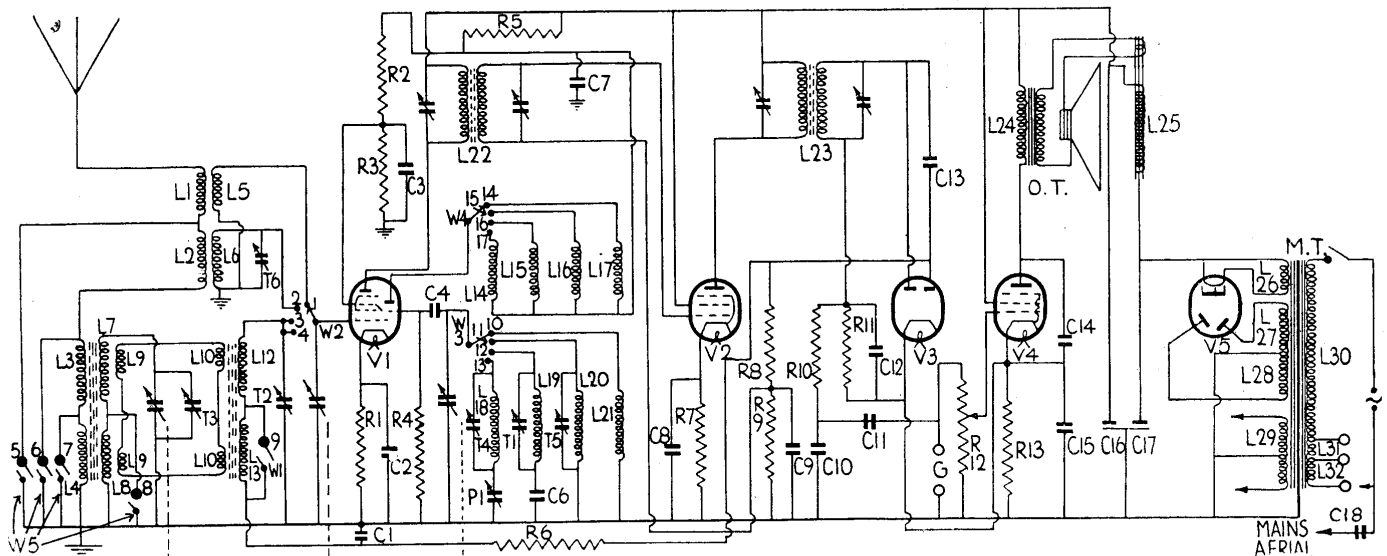
V.	Type.	Electrode.	Volts.	Ma.
1	(All Mullard) TH4 (7)	Anode ..	255	2.5
		Screen ..	50	3.5
		Osc. anode ..	105	5.5
2	VP4B (7)	Anode ..	255	8.1
		Screen ..	255	3.1
3	2D4A (5)	Diodes only	—	—
4	Pen A4 (7)	Anode ..	235	34
		Screen ..	255	5.4
5	IW4/350 (4)	Heater	332	—

## RESISTANCES

R.	Purpose.	Ohms.
1	V1 cathode bias ..	200
2	V1 screen pot. (part) ..	10,000
3	V1 screen pot. (part) ..	25,000
4	Osc. grid leak ..	25,000
5	Osc. anode decoupling ..	13,000
6	V1 A.V.C. decoupling ..	1 meg.
7	V2 cathode bias ..	150
8	A.V.C. diode load (part) ..	500,000
9	A.V.C. diode load (part) ..	500,000
10	H.F. stopper ..	50,000
11	Demodulating diode load ..	500,000
12	Volume control ..	500,000
13	V4 cathode bias ..	150

## CONDENSERS

C.	Purpose.	Mfds.
1	V1 A.V.C. decoupling ..	.1
2	V1 cathode bias shunt ..	.1
3	V1 screen decoupling ..	.1
4	Osc. grid ..	.0001
6	M.W. osc. fixed padder ..	.002
7	Osc. anode decoupling ..	.1
8	V2 cathode bias shunt ..	.1
9	V2 A.V.C. decoupling ..	.1
10	H.F. by-pass ..	.0002
11	L.F. coupling ..	.005
12	H.F. by-pass ..	.0002
13	A.V.C. diode coupling ..	.0002
14	Pentode compensator ..	.005
15	V4 cathode bias shunt ..	.25
16	H.T. smoothing ..	6
17	H.T. smoothing ..	6
18	Mains aerial coupling ..	.0001



Band-pass input to the frequency-changer with iron-cored input and I.F. coils are found in the 820. A separate double diode feeds a high-slope pentode direct.

## Circuit Alignment Notes

**I.F. Circuits.**—Connect an output meter across the extension speaker terminals on the speaker panel. Switch set to M.W. band, turn gang to maximum capacity and volume control to maximum. Connect a service oscillator between the top grid cap of V1 and chassis.

Tune oscillator to 117.5 kc. and adjust first the trimmers of I.F.T.2 and then I.F.T.1 for maximum, reducing the input from the service oscillator as the circuits come into line, so as to keep the A.V.C. inoperative.

### WINDINGS (D.C. Resistances)

Windings.	Ohms.	Range	Measured between.
L1 .. ..	.2	SW1	Aerial socket and chassis.
L1+L2 ..	.4	SW2	Aerial socket and chassis.
L1+L2+L3	68.4	MW	Aerial socket and chassis.
L1+L2+L3+L4	74.3	LW	Aerial socket and chassis.
L5 .. ..	.1	SW1	Top grid connector V1 and chassis.
L6 .. ..	.2	SW2	Top grid connector V1 and chassis.
L7 .. ..	1.7	MW	Aerial gang and chassis.
L7+L8 ..	15.7	LW	Aerial gang and chassis.
L9+L10 ..	10.6	Any	Red and black wires between cans.
L12 .. ..	1.7	MW	W2 and W1.
L12+L13 ..	14.7	LW	W2 and W1.
L14 .. ..	18.8	SW1	W4 and R5+R2.
L15 .. ..	.5	SW2	W4 and R5+R2.
L16 .. ..	46.4	MW	W4 and R5+R2.
L17 .. ..	2.4	LW	W4 and R5+R2.
L18 .. ..	.1	SW1	W3 and chassis.
L19 .. ..	.1	SW2	W3 and chassis.
L20 .. ..	1.5	MW	W3 and C6.
L21 .. ..	8.7	LW	W3 and P1.
L22 prim. ..	32.7	Any	Tags.
L22 sec. ..	30.7	Any	Top grid V2 and tag.
L23 prim. ..	33.7	Any	Tags.
L23 sec. ..	33.7	Any	Tags.
O.T. prim. ..	428	Any	E.S. terminals.
M.T. prim. ..	36	Any	Mains plug pins.
Total H.T. sec.	424	Any	V5 anode pins.
Field (L24) ..	1,180	Any	Outside tags speaker panel.

**Signal Circuits.**—Connect the service oscillator to the A and E sockets via a dummy aerial, only feeding sufficient input to obtain reliable peaks in the output meter.

Set the pointer so that it is horizontal when the gang is maximum.

**Medium Waves.**—Tune set and oscillator to 250 metres (1,200 kc.) and adjust T1, T2 and then T3 for maximum.

The medium-wave padding is fixed, but check calibration at 500 metres (600 kc.), compensating with T1 if necessary and re-trimming T2 and T3 on a 250-metres signal.

**Long Wave.**—Tune set and oscillator to 1,200 metres (250 kc.) and adjust T4 for maximum, at the same time rocking the gang.

Tune set and oscillator to 1,900 metres (157.9 kc.) and adjust P1 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

**Short Waves (2).**—Tune set and oscillator to 30 metres (10 mc.) and adjust T5 and then T6 for maximum, using the peak obtained with T5 nearest to its minimum capacity position.

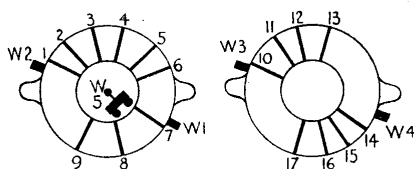
The short-wave padding is fixed, but check calibration throughout the range covered.

**Short Waves (1).**—There are no separate trimmers for this waveband.

### Replacement Condensers

Exact replacement condensers for the 820 are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18.

For the block containing C16 and C17 there is unit list number 3,764, price 5s. 6d. For C15 there is unit 2,918, 1s. 9d.



Above are the switch banks with contacts numbered corresponding to the circuit diagram.

## Alba 820 on Test

**MODEL 820.**—Standard model for A.C. mains operation, 200-250 volts, 40-100 cycles. Price 9½ gns.

**DESCRIPTION.**—Four-valve, plus rectifier, four-band table superhet.

**FEATURES.**—Full-vision scale, coloured as to wavebands and calibrated in station names and metres. Controls for concentric tuning. Combined volume and master switch, wave selection and tone control. Sockets for pick-up and terminals for extension speaker. Mains aerial provided.

**LOADING.**—61 watts.

### Sensitivity and Selectivity

**SHORT WAVES** (12.5-32 and 28-85 metres).—Both bands have good gain and adequate selectivity. Handling is easy and the background is good.

**MEDIUM WAVES** (200-550 metres).—Excellent sensitivity, with a reasonable background and good selectivity. Local stations spread on adjacent channels only. Sensitivity well maintained.

**LONG WAVES** (700-2,000 metres).—Representative gain and selectivity. Deutschlandsender received with very slight interference. Background good.

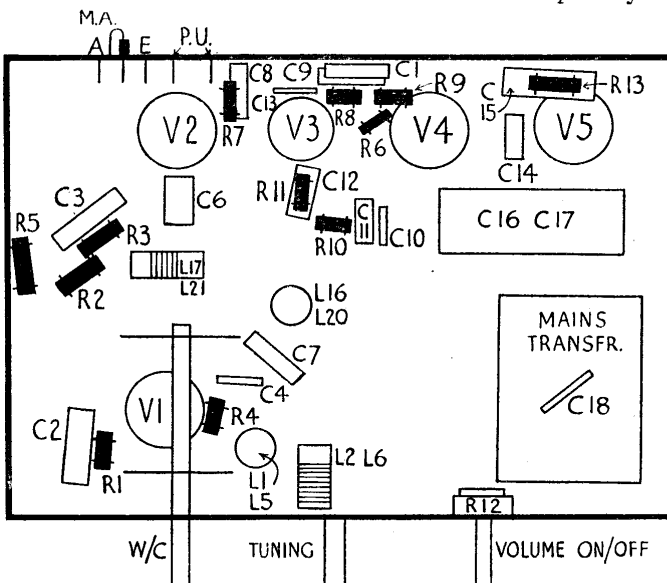
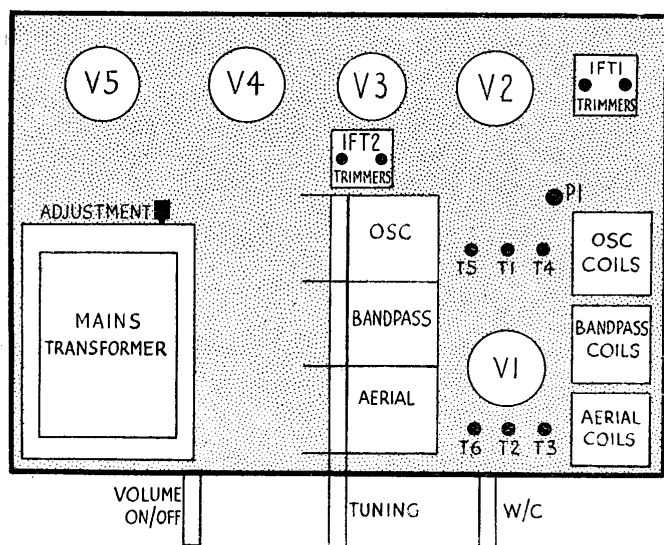
### Acoustic Output

Ample volume for an ordinary room, with crisp, clean attack. Little colouration on speech and good overall balance, the tone control being not too vigorous in action.

### Open Secondary

A LOUD noise like motor-boating was heard every time a receiver was switched on and occurred when the set was cold. The various voltages and parts were tested, without success.

Testing the mains transformer with an ohmmeter as a last check, it was found that the secondary had an intermittent open circuit. When the rectifier heated sufficiently an arc occurred across the ends and welded them temporarily.



All components can be identified with the aid of these diagrams of the top of the 820 chassis (left) and underside (right). Resistors are in solid black, condensers in outline.